

What is claimed is:

- 1 1. An apparatus for measuring the gripping strength of a vacuum gripping
2 tool comprising:
3 a platform including a platform body and a platform surface for receiving a
4 vacuum head of a vacuum gripping tool thereon;
5 a pressure gauge;
6 a conduit extending through said platform body, extending to said pressure
7 gauge, and terminating at an opening formed in said platform surface; and
8 a positioning device that positions a vacuum port of said vacuum head over said
9 opening.
- 1 2. The apparatus as in claim 1, wherein said vacuum head includes a flat
2 gripping surface and said positioning device urges said flat gripping surface to
3 continuously confront a flat receiving surface of said platform surface.
- 1 3. The apparatus as in claim 1, further comprising a power source for
2 providing voltage to said pressure gauge.
- 1 4. The apparatus as in claim 1, wherein said pressure gauge is pre-
2 programmed with acceptable vacuum pressure values and unacceptable vacuum
3 pressure values, measures vacuum pressure, and includes a display that indicates if
4 measured vacuum pressure is acceptable or unacceptable.
- 1 5. The apparatus as in claim 1, wherein said pressure gauge displays a
2 numeric value indicative of measured vacuum pressure.
- 1 6. The apparatus as in claim 1, further comprising a clamp that contacts said
2 vacuum head and exerts a force that downwardly urges said vacuum head toward said
3 platform surface.

1 7. The apparatus as in claim 6, wherein said clamp includes a flexible beam
2 affixed to said platform surface.

1 8. The apparatus as in claim 1, wherein said positioning device includes a
2 pair of complimentary positioning members, each positioning member including a spring
3 and an abutment member, said pair of complimentary positioning members resiliently
4 positioning said vacuum head over said opening.

1 9. The apparatus as in claim 8, wherein each positioning member further
2 includes guide pins.

1 10. The apparatus as in claim 8, wherein said positioning members of said
2 pair of complimentary positioning members urge said vacuum head in substantially
3 opposite lateral directions.

1 11. The apparatus as in claim 8, wherein said positioning members of said
2 pair of complimentary positioning members include respective spring force directions
3 that form an obtuse angle.

1 12. The apparatus as in claim 8, wherein each abutment member includes a
2 guide face substantially orthogonal to said platform surface and an overhang disposed
3 over said guide face.

1 13. The apparatus as in claim 12, wherein said vacuum head includes an
2 opposed face opposite said gripping surface, and each overhang portion includes a
3 surface that faces said opposed face.

1 14. The apparatus as in claim 13, wherein each overhang portion contacts
2 said opposed face and guides said vacuum head toward said platform surface.

1 15. The apparatus as in claim 8, wherein said positioning members of said
2 pair of complimentary positioning members include respective opposite linear force
3 components along a plane formed by said pedestal surface.

1 16. The apparatus as in claim 15, wherein said linear force component is
2 along an x-axis direction and said positioning device further includes a mechanical stop
3 that stops motion of said vacuum head along a y-axis direction of said plane.

1 17. The apparatus as in claim 1, wherein said positioning device further
2 includes a mechanical stop affixed to said platform surface and having a stop surface
3 substantially orthogonal to said platform surface and for stopping said vacuum head in a
4 lateral direction.

1 18. The apparatus as in claim 1, wherein said positioning device includes a
2 complimentary pair of resiliently compressible positioning members disposed about a
3 receiving area such that, when said vacuum port is positioned over said opening,
4 opposed sides of said vacuum wand head resiliently compress each of said positioning
5 members substantially equally.

1 19. The apparatus as in claim 18, wherein said opposed sides of said vacuum
2 head resiliently compress said positioning members in substantially opposite directions.

1 20. The apparatus as in claim 1, wherein said platform surface includes a flat
2 receiving surface conterminously receiving a gripping surface of said vacuum head, said
3 receiving surface formed of one of stainless steel, aluminum, and Teflon.

1 21. The apparatus as in claim 1, wherein said vacuum port comprises an
2 opening in said vacuum head open to a vacuum source and includes a recessed portion
3 recessed below a gripping surface of said vacuum head.

1 22. A method for measuring gripping strength of a vacuum wand comprising:

2 providing a flat surface on a platform, said flat surface having an opening therein,
3 said opening extending through said platform to a pressure gauge;

4 placing a gripping surface of a vacuum wand head of an operating vacuum wand
5 on said flat surface such that a vacuum port of said vacuum wand head is aligned facing
6 said opening; and

7 causing said vacuum gauge to read vacuum pressure exerted by said vacuum
8 wand upon said opening.

1 23. The method as in claim 21, further comprising automatically urging said
2 vacuum wand head toward said flat surface.

1 24. The method as in claim 22, further comprising automatically laterally
2 urging said vacuum port to an alignment position over said opening.

1 25. The method as in claim 24, wherein said automatically laterally urging
2 comprises applying a complementary set of substantially opposite spring forces.